WASHINGTON TROUT

Michael Gearheard, Director
Office of Water and Watersheds
USEPA (OWW-130)
1200 Sixth Avenue
Seattle, WA 98144

July 31, 2006

RE: Draft NPDES Permit, Leavenworth National Fish Hatchery (WA-000-190-2)

Dear Mr. Gearheard:

Washington Trout offers the following comments on the subject permit. We have reviewed the draft permit and fact sheet, along with the expired permit and various permit-related documents obtained from the US Fish and Wildlife Service (USFWS) through a Freedom of Information Act request. We have also reviewed various reports produced by the Washington Department of Ecology (Ecology) on the water quality and biological health of Icicle Creek. Any cited documents that are not generally available are included with these comments, per 40 CFR 124.13.

We are pleased that the USFWS and EPA have decided to comply with the Clean Water Act in the same way that hundreds of municipalities and businesses across Washington have been complying—by applying for and issuing an up-to-date NPDES permit. Unfortunately, the permit as drafted will not result in Icicle Creek attaining applicable water quality standards.

Background

Facility Background

The previous permit of the Leavenworth National Fish Hatchery (LNFH) was issued in 1974 and expired in 1979. The USFWS applied to EPA on November 8, 2005 for an NPDES permit for the LNFH. The application identifies the LNFH as a "concentrated aquatic animal production facility" with 88 raceways and 135 nursery tanks. The LNFH rears 90,300 pounds of spring chinook salmon annually (with a maximum of 101,968 pounds) and acclimates an additional 46,700 pounds of coho salmon in March and April. The maximum amount of fish food used is 21,700 pounds in August.

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The water source is Icicle Creek and seven wells. The LNFH's intake on Icicle Creek is permitted to withdraw up to 54 cubic feet per second (cfs), which includes the LNFH's water right of 42 cfs and the Cascade Orchard Irrigation Company's water right of 12 cfs (USFWS 2005a). The LNFH also has a water right of 16,000 acre-feet (af) from Snow and Nada Lakes (USFWS 2005a). That water is routed into Snow Creek and Icicle Creek and withdrawn at the surface water intake (the confluence of Snow Creek and Icicle Creek is upstream of the LNFH intake). Water rights from the seven wells total 14.928 cfs (USFWS 2005a). Water rights of the LNFH are summarized in the following table (taken from USFWS 2005a):

Water Source	Priority Date	Diversion Rate
Icicle Creek	3/26/1942	42 cfs (18,851 gpm)
Snow and Nada Lakes	3/26/1942	16,000 acre-ft.
Well	8/1/1939	1.560 cfs (700 gpm)
Well	6/1/1940	2.005 cfs (900 gpm)
Well	10/16/1957	2.674 cfs (1200 gpm)
Four Wells	10/20/1980	8.689 cfs (3900 gpm)

The LNFH intake is at river mile (RM) 4.5 (USFWS 2006). There are water withdrawals upstream of the LNFH intake, and during low flow periods in summer, Icicle Creek may have very little flow downstream of the LNFH intake (Montgomery Water Group 2004).

The LNFH discharges essentially all of the water that it withdraws. According to the fact sheet, water flows through the 88 raceways and is discharged into Icicle Creek via outfall 001, at an average volume of 26 million gallons per day (MGD) or 40.3 cfs. Two adult holding ponds are used to direct fish to Icicle Creek in April of each year, and this outfall (004) has an average flow rate of 5.04 MGD (7.8 cfs) for the two weeks of operation. When outfall 004 is flowing, the discharge of outfall 001 is reduced by a corresponding amount. These outfalls are approximately at RM 2.8, about 1.7 miles downstream of the intake. Another outfall, 003, operates intermittently as a return route for Icicle Creek fish that enter the intake (the intake is not screened to exclude fish at Icicle Creek, but farther "downstream" in the supply system). This outfall flows at an average rate of 0.144 MGD (0.22 cfs).

Water used to clean the hatchery raceways is routed to the LNFH's pollution abatement pond. The treatment afforded is detention (solids are given time to settle). Discharge from the pond averages 0.288 MGD (0.45 cfs) with a maximum discharge of 8.6 MGD (13.3 cfs). The difference between the average and the maximum discharges implies that the abatement pond discharges infrequently to Icicle Creek. No information on the frequency of discharge (presumably connected to raceway cleaning) is given in the application, the fact sheet, or the permit. An EPA "Water Compliance Inspection Report" dated August 19, 1998 (USEPA 1998) indicates that an inspection occurred on August 11, 1998. The "Summary of Findings/Comments" states

> Facility vacuums & brushes raceways 1-2X /week. Incubators & raceway effluent sent to pollution abatement pond for separation (settling) of solids before entering Icicle Creek… Pollution abatement pond cleaned every two years.

From all of this information, it appears that the pond flows for a few hours on days when raceways are cleaned, which is once or twice a week. No information is given in the application, the fact sheet, or the permit on frequency of cleaning the pollution abatement pond of accumulated solids.

Icicle Creek Background

Icicle Creek is the receiving water for the discharges from the LNFH. At the intake structure and outfall locations, Icicle Creek is classified as "Class A" in Washington's water quality standards (Chapter 172-201A WAC). According to Chapter 172-201A-030(2)(b) WAC, the "characteristic uses" for Class A waters include, but are not limited to:

> water supply (domestic, industrial, agricultural).
> stock watering.
> fish and shellfish:
> > salmonid migration, rearing, spawning, and harvesting.
> > other fish migration, rearing, spawning, and harvesting.
> > clam, oyster, and mussel rearing, spawning, and harvesting.
> > crustaceans and other shellfish (crabs, shrimp, crayfish, scallops, etc.) rearing, spawning, and harvesting.
> wildlife habitat.
> recreation (primary contact recreation, sport fishing, boating, and aesthetic enjoyment).
> commerce and navigation.

Numeric water quality criteria for various parameters have been assigned to Class A waters. The Class A temperature criterion is

> Temperature shall not exceed 18.0 °C (freshwater) or 16.0 °C (marine water) due to human activities. When natural conditions exceed 18.0 °C (freshwater) and 16.0°C (marine water), no temperature increases will be allowed which will raise the receiving water temperature by greater than 0.3 °C.

While Washington made extensive revisions to its standards in 2003, including some numeric criteria, and the "class-based" system has been replaced by a "use-based" system, not all of the changes have been approved by EPA, and are not yet effective. Still other changes have been proposed by Ecology. For example, Ecology is proposing that the reach of Icicle Creek adjacent to the LNFH and its intake be protected for "core summer habitat" with a temperature criterion (7-day average of the daily maximum temperatures) of 16°C. The lowest 1-day minimum dissolved oxygen content for core summer habitat waters is 9.5 mg/L. This permit may need to be modified, revised or reissued as the various changes to the water quality standards are approved by EPA.

Regardless of the specific numeric water quality criteria that are in place, any NPDES permit issued must conform to the antidegradation policy included in Washington's water quality standards. Chapter 173-201A-070(1) states

> Existing beneficial uses shall be maintained and protected and no further degradation which would interfere with or become injurious to existing beneficial uses shall be allowed.

Therefore, the "characteristic uses" of Class A waters as well as any applicable water quality criteria must be protected by this permit.

In the vicinity of the LNFH, Icicle Creek is included as a "Category 5" water (a polluted water that requires a TMDL (Total Maximum Daily Load determination) on Washington's 2004 Clean Water Act Section 303(d) for temperature, pH, and dissolved oxygen. Icicle Creek below the LNFH is listed as a "Category 4C" (a water body impaired by a "non-pollutant") for instream flow.

The USFWS completed an Environmental Impact Statement (EIS) on the Icicle Creek Restoration Project in January 2002 (USFWS 2002). The first phase of the restoration project, consisting of removal of Structures 3 and 4, was completed by the USFWS along with the Icicle Creek Watershed Council in 2003. In 2005, the USFWS applied for Clean Water Act Section 404 permits from the US Army Corps of Engineers to begin "Phase II" of the restoration project and also for rebuilding their water intake system (COE permit application numbers 200500028 and 200401488, respectively) but later withdrew the applications after the public comment period closed.

Comments

A. Scope Of The Permit

The permit can only be issued if it contains sufficient conditions to ensure that water quality standards are met (40 CFR 122.44(d)). It is clear from the description of the facility in the draft fact sheet that operation of the LNFH can only occur if the hatchery is able to legally discharge the water it withdraws from Icicle Creek and its wells. EPA is required to consider all of the aspects of the operation of the LNFH when evaluating this application, and not limit itself to the physical and chemical characteristics of the effluents discharged from the four outfalls and the effects on Icicle Creek downstream of the outfalls.

In *PUD No. 1 of Jefferson County* v *Washington DOE*, 114 S. Ct. 1400 (1994), the US Supreme Court ruled that "activities," and not merely "discharges" must be considered when assessing compliance with water quality standards. The ruling also said that Washington's antidegradation policy protected "uses," not just water quality criteria, and both uses and criteria must be protected in order for an activity to comply with water quality standards. In that case, the Washington Department of Ecology required a minimum instream flow in order to protect the aquatic life uses of the Dosewallips River.

Water quality standards would not have been met otherwise because the use would not have been protected.

Here, the operation of the LNFH has caused violations of water quality standards in Icicle Creek. Some uses are not being protected, and some specific water quality criteria are not being met. The issuance of the permit as drafted will not result in the attainment of water quality standards, because EPA unreasonably limited its review to the effects of the discharges and not a broader evaluation of the LNFH's activities. The permit does not contain sufficient conditions, as required by 40 CFR 122.44(d), that will result in attainment of water quality standards. EPA should withdraw this draft permit and reissue a new draft that takes into account the all of the operations of the LNFH.

B. Violations Of Water Quality Standards From Hatchery Operations

Operations at the LNFH have violated Washington's water quality standards in the past and will continue to violate standards if this permit is issued. For example:

- fish passage is routinely blocked by the LNFH, impairing the "salmonid migration" and "other fish migration" characteristic uses protected in Class A waters;

- diversion of water into the intake structure dewaters Icicle Creek exacerbating violations of the temperature criterion;

- operation of the headgate (Structure 2) causes Icicle Creek water to be diverted into a canal adjacent to the hatchery, causing further violations of the temperature criterion in Icicle Creek adjacent to the hatchery grounds (the "historical" channel); and

- the intake dam's fish ladder is not used to pass fish, but instead to flush accumulated sediment from the water intake area.

EPA failed to evaluate the operations of the LNFH in terms of the beneficial uses of Icicle Creek and condition the permit accordingly.

EPA has made some small steps in putting conditions into this permit so that water quality standards (in the way of numeric criteria) will be met. For example, we note that in the compliance schedule for the phosphorus effluent limitation (draft permit, p. 16) EPA states the USFWS "will begin to evaluate the option of diverting more water from Snow Lake." There are other reasonable measures EPA could have directed the USFWS to evaluate in regard to the phosphorus issue (discussed below). The larger point is that if EPA is going to direct USFWS to evaluate the option of diverting more water in order to meet a numeric water quality criterion, then EPA has the authority to direct the USFWS to evaluate any reasonable option in order to meet any applicable water quality criterion or to protect any characteristic use of Icicle Creek, a Class A water. Unfortunately, EPA has not done so.

1. Fish Migration, A "Characteristic Use," Is Not Protected

While fish passage has been hindered to some degree or another ever since the LNFH was constructed over 65 years ago, the LNFH continues to operate Structures 2 and 5 to suit its operational needs without consideration of the characteristic uses of Icicle Creek. The "salmonid migration" use and the "other fish migration" use have been particularly affected. Currently, the LNFH operates Structure 5 (near the fish ladder) and Structure 2 (the headgate) to facilitate fish collection of spring Chinook adults and Coho adults and the acclimation of Coho salmon according to the USFWS (2004), in a document entitled "Operational Plan for Leavenworth National Fish Hatchery's Structures 2 and 5."

In 2000, the LNFH, with the cooperation of the Yakama Nation, commenced the Coho salmon reintroduction project that resulted in a sharp increase of the number of months fish passage is completely blocked or severely inhibited (NOAA 2003; USFWS 2004). According to USFWS (2004), from mid-March to early May fish passage will be "limited" at both Structures 2 and 5, and from mid-September to December, "the adjustments at Structure 5 will block up and downstream fish passage." Before the Coho introduction project, fish passage would have been possible in this five month period. This nearly five-month reduction of fish migration opportunities must be considered in light of the typical blockage the stream experiences in early May to late August to facilitate collection of returning spring Chinook adults. With the Coho project, fish migration is now hindered or stopped most of the year.

The five-month period of fish passage must be considered an "existing use" protected by Washington's antidegradation policy (WAC 173-201A-070(1)) because the Coho introduction project commenced after November 28, 1975 (the date used by EPA for the establishment of existing uses (40 CFR 131.3) and adopted by the State of Washington into its standards in its latest revisions). Washington's antidegradation policy prohibits the elimination of existing uses (WAC 173-201A-070(1)).

Ironically, the USFWS (2004) document outlining how Structure 2 and Structure 5 will be operated throughout the year also outlines how the LNFH will strive to comply with Washington's turbidity criterion. While this effort to comply with one provision of Washington's water quality standards is appreciated, we do not know of any analogous effort to ensure that the characteristic uses of Icicle Creek, including fish migration, are protected through the operation of the structures.

We realize that the LNFH may have production numbers outlined in *US* v. *Oregon* or other court cases, as well as Tribal treaty responsibilities to uphold. None of those, however, can authorize the LNFH to violate the Clean Water Act by eliminating fish migration opportunities. The LNFH's ability to operate in such a manner and thus eliminate the existing fish migration uses is directly related to its ability to discharge. Therefore, EPA must consider this NPDES permit in light of the LNFH's operations that adversely affect the fish migration and other protected uses of Icicle Creek.

One possible operating scenario for the LNFH to evaluate in order to protect the fish migration characteristic uses of Icicle Creek is to apply limitations to the duration of trapping returning adult fish (e.g., remove boards and stop logs) on an hourly, daily, or weekly basis. Incidentally, this is also an "all agency" term and condition applicable to the LNFH in NOAA's Biological Opinion on LNFH operations (NOAA 2003). As USFWS (2004) outlines, however, the USFWS does not operate Structures 2 and 5 on anything less than a seasonal basis. This violation of the Biological Opinion is the subject of legal action between Washington Trout and the USFWS. The fact that this issue is in litigation, however, does not relieve EPA of its duty to ensure that the NPDES permit is conditioned such that the operation of the LNFH complies with water quality standards.

2. Diversion Of Water Contributes To High Temperatures

EPA cites a USFWS study of temperature in Icicle Creek that evaluated the "effects of [LNFH] operations on Icicle Creek water temperatures" (USFWS 2006). EPA uses this report as evidence that "the water temperature of Icicle Creek downstream of the Hatchery discharge is cooler during the critical period than that upstream of inflow from Snow Creek" and therefore there is "no reasonable potential" for the *discharge* to violate the water quality criterion, and no need for temperature limits. Unfortunately, EPA fails to assess all of the impacts that the LNFH's water withdrawal has on Icicle Creek temperatures, even though EPA recognizes that "almost all of the water in Icicle Creek above the Hatchery is diverted into the Hatchery during the critical warm summer months" (fact sheet, p. 11).

The USFWS (2006) report states that "in August and September the stream temperature downstream of the intake was more than double the increase upstream of the intake despite the slightly shorter distance" (0.7 miles downstream vs. 0.9 miles upstream). The relevant measured temperature changes were as follows:

Month	Upstream Change (^{o}C) (RM 5.4 to 4.5)	Downstream Change (^{o}C) (RM 4.5 to 3.8)
August	+0.8	+2.3
September	+0.6	+1.9

These increases contribute to the temperature criterion violations that the same study identified and the difference is attributable to the LNFH's withdrawal. Icicle Creek was in violation of the criterion above Snow Creek, and the water diverted by the USFWS actually cooled the stream. The withdrawal of water from Icicle Creek causes sharp increases in temperature. Factoring in the upstream change, it appears that the LNFH withdrawal causes Icicle Creek temperatures to increase an additional 1.3 ^{o}C to 1.5 ^{o}C in only 0.7 miles. As the USFWS report (2006) summarizes, the rate of warming per mile "for August and September was an average of +0.7 ^{o}C upstream of the diversion and an average of +2.1 ^{o}C downstream of the diversion." EPA's permit does not consider the fact that the LNFH withdrawal causes temperature increases in Icicle Creek between the

intake and Structure 2 (RM 4.5 to RM 3.8) that are much greater than the 0.3°C increase allowed by the criterion.

EPA must direct USFWS to evaluate alternatives to its current withdrawal location and take temperature effects on Icicle Creek into account. USFWS has been evaluating alternatives, but did not consider violations of the temperature criterion in its evaluation (USFWS 2005a). The Clean Water Act Section 404 permit application filed last year by the USFWS (COE reference number 200401488) envisioned reconstructing the intake at its current location. If that were to occur and if the USFWS would operate the diversion as it has, Icicle Creek would suffer for decades from unreasonably high temperatures, as the USFWS alternatives analysis (USFWS 2005a) specifies a fifty-year life for any intake system.

3. Operation Of Structures 2 and 5 Cause Violations Of Temperature Criteria

The operational plan of Structures 2 and 5 that results in diminished fish migration (USFWS 2004) also exacerbates violations of temperature criteria in the "historical" channel of Icicle Creek. The restricted flows to Icicle Creek also decrease available fish habitat, and prevent the natural flushing of sediments.

Temperature effects are the most obvious. As described above, Icicle Creek is temperature stressed due to the LNFH's withdrawal at RM 4.5. Icicle Creek's flow is further diminished by the operation of Structure 2 (RM 3.8), which causes flow to be split between the LNFH's "canal" and Icicle Creek. The USFWS restricts flows in Icicle Creek by limiting flow through Structure 2 whenever the stop logs are in place in downstream Structure 5, because USFWS believes Structure 5 may overtop (USFWS 2004). The stop logs are put into place to allow the LNFH to meet various operational goals.

The USFWS temperature study (USFWS 2006) indicates further temperature increases in the ~1.0 mile channel of Icicle Creek between Structures 2 and the confluence with the LNFH canal. By that point (RM 2.8), Icicle Creek is well above the 18.0°C Class A maximum temperature, and is approaching or surpassing lethal temperatures for salmonids (23°C, as identified by WDOE (2005)).

The high temperatures and restrictions on fish passage pose a particularly threatening situation for salmonids. In early May, fish passage is relatively easy, but after that, Structures 2 and 5 are operated for spring Chinook broodstock collection (USFWS 2004). Fish already upstream of Structure 5 are prevented from passing Structure 2 and are effectively trapped. Initial conditions may be suitable for them to spawn in this area, but then fish and redds alike are subject to lethal or near lethal temperatures as flows drop and most of Icicle Creek is first diverted into the LNFH intake then into the LNFH canal.

EPA needs to take into account the adverse effects caused by the LNFH operations on Icicle Creek temperature, not just the discharges' effects. It is irrelevant that without the LNFH's diversion of water from Snow Lake, Icicle Creek might

essentially be dewatered due to other water withdrawals. If the LNFH did not exist, Snow Lake water would still be available, and there is no reason to believe that the appropriate agencies (e.g., NOAA and the US Forest Service) might not work out an agreement to divert Snow Lake water in order to augment Icicle Creek's flows.

4. The Intake Dam's Fish Ladder Is Used To Illegally Flush Sediment

The USFWS (2005a) study of water intake alternatives has this to say regarding the fish ladder at the intake dam:

> In the late 1980's, the dam was rehabilitated and a fishway constructed at the entrance to the intake channel. Because of the high bed load and suspended sediment loads present in the creek during portions of the year, the pool and weir design of the fishway proved to be unsuccessful. Currently the fishway has been abandoned as a means of passing fish around the dam. All stoplogs have been removed from the chute and *it has been operated periodically as a sluiceway to flush accumulated sediment away from in front of the intake channel's entrance* (emphasis added).

The LNFH has a settling basin as part of its water intake system, so this discharge appears to be done for the LNFH's operating convenience. We are aware of no permit for this activity, and this draft permit does not address this issue. This is yet another example of the LNFH's operations adversely affecting water quality. EPA should condition this permit in order to prevent the LNFH from using their fish ladder to illegally discharge sediment to Icicle Creek.

C. Comments On Numeric Limits In The Draft Permit

1. The Phosphorus Limit Will Not Result In Attainment Of Standards

EPA cites a number of conclusions of the Washington Department of Ecology's TMDL study (WDOE 2006) that conclude that the violations of the pH criterion in lower Icicle Creek are due to excess periphyton growth (fact sheet, pp 9-11). EPA fails to include WDOE's salient conclusion that "to attain water quality standards in lower Icicle Creek the [LNFH] main outfall would have to reduce its inorganic-P concentration to less than 5.0 µg/L" (<0.005 mg/L) (WDOE 2006). EPA's apparent justification is based on the fact that no wasteload allocations were determined in the WDOE study, that final load allocations and wasteload allocations will be developed in an "approved TMDL" and that "the recommendations for pollutant loading that were included in the state's technical report are anticipated to change as a result of [the TMDL] process" (fact sheet, p. 11).

EPA goes on to propose what it calls "water quality-based limitations for total phosphorus" that are set at 0.010 mg/L, which is over twice the concentration cited by WDOE (2006) (fact sheet, pp. 14-17). EPA fails to show how these "water quality-based" limitations were derived. EPA says that the limits are based on "best available information," but cite no documents except the WDOE technical report (WDOE 2006).

WDOE (2006) sampled the LNFH's discharge on eight dates in 2002-2003, and the phosphorus concentrations ranged 0.0065-0.024 mg/L, with an average concentration of 0.015 mg/L. The WDOE (2006) study expressed a need to reduce phosphorus concentrations by 55%, and also indicated that the LNFH was responsible for 86.3% of the total phosphorus load to lower Icicle Creek. It is hard to imagine, however, how Icicle Creek will attain standards if the LNFH is only required to reduce its load by 33% (0.015 mg/L to 0.010 mg/L). Even if all other loads were reduced to zero (an impossibility), and the LNFH complied with the effluent limitations in EPA's draft permit, Icicle Creek would still have an excess of phosphorus.

One measure that EPA directs the USFWS to evaluate is "increasing Icicle Creek stream flow during the period from July 1 to September 30 by diverting more water from Snow Lake." Both Snow Lake and Snow Creek are "waters of the state" and are protected in their own right, and are not simply a water source and a pipeline to be used at the LNFH's whim. Any evaluation should include a study on the effects of water withdrawal on Snow Lake and the addition of water to Snow Creek.

EPA also states that "reducing water diverted for irrigation from Icicle Creek above the Hatchery" may improve water quality. We believe that EPA should focus on what the LNFH can do, rather than speculate on what others may be able to do to ameliorate the problems caused by the LNFH. The LNFH can and should evaluate other reasonable measures. For example, one obvious solution is for the LNFH to evaluate raising fewer fish because the phosphorus in the discharge is a direct result of the LNFH's fish rearing activities. If accompanied by withdrawing less water from Icicle Creek, there may be temperature benefits to Icicle Creek from this measure, as well as greater opportunities for fish passage. There may be other reasonable measures that the LNFH can evaluate once EPA fully considers the LNFH's operations.

Because of the large discrepancy between the WDOE's technical report (WDOE 2006) and the effluent limitations in this draft permit, we request a public hearing on this permit, perhaps held jointly with the Washington Department of Ecology, so that EPA can explain the derivation of the 0.010 mg/L effluent limitations for phosphorus.

2. The Permit Does Not Address PCBs And Other Fish Feed Contaminants

Similar to temperature, EPA states that there is no reasonable potential for the LNFH to discharge PCBs (polychlorinated biphenyls) or other organic pollutants. The fact sheet states that USFWS study (USFWS 2005b) found no "statistical difference between PCB concentrations in stream sediment upstream and downstream of the Hatchery discharge" (fact sheet, p.11). Washington Trout commented to the USFWS on their 2005 study (Washington Trout 2006; attached), and we stated that the USFWS's use of inferential statistics in this study was not appropriate due to a lack of independence of the samples. We were also concerned about the lack of organic material in all of the instream samples, which would bias the samples towards lower concentrations. Washington Trout believed that the USFWS study did not adequately represent worst-case conditions and is of limited utility. We recommended that USFWS cooperate with

the Washington Department of Ecology in the TMDL study for PCBs and DDT and consider placing Semipermeable Membrane Devices (SPMDs) into various locations.

More significantly, the USFWS study clearly shows PCB concentrations in the sediments of the LNFH pollution abatement pond an order of magnitude higher than either upstream or downstream samples. Those samples were also above the appropriate benchmark that the USFWS chose to use to evaluate PCB concentrations in sediments. No information is given in the application, the fact sheet, or the permit on frequency of cleaning the pollution abatement pond of accumulated solids. When we discussed the PCB report with USFWS staff on April 25, 2006, we learned that the pollution abatement pond was last cleaned in 1998. This is in contrast to the EPA "Water Compliance Inspection Report" cited above (USEPA 1998) which stated that the pollution abatement pond was "cleaned every two years."

USFWS (2005) and EPA in this fact sheet apparently agree that the source of PCBs at the LNFH is fish food. EPA does not propose any effluent limitations, apparently relying on the fact that the LNFH is planning to clean "sediments from the pollution abatement pond" and "properly dispose of removed solids."

We are troubled by the fact that this permit contains no directives regarding the pollution abatement pond. In 1998, EPA believed that the pond was cleaned every two years. Once it was cleaned in 1998, however, it was apparently ignored. We fear that even if the pollution abatement pond is cleaned this year, the LNFH has no incentive to maintain this pollution abatement system.

Because there is a constant source (fish food) being brought into the LNFH which has a route into Icicle Creek (either uneaten fish food pellets or *via* fish feces), EPA must condition this permit to require periodic maintenance of the pollution abatement system, including periodic cleaning of the pollution abatement pond. EPA should also direct USFWS cooperate with the Washington Department of Ecology in its TMDL study of PCBs and DDT in order to get a clearer picture of contamination.

D. Compliance With NEPA

Nothing in the fact sheet describes if this action is subject to the National Environmental Policy Act. Apparently, NEPA is only triggered if the facility is a "new source" (40 CFR 122.29(c)). The pollution abatement pond was constructed in 1986 (USFWS 1985), but this is the first NPDES permit issued since the construction of the pollution abatement pond. Therefore, this facility may in fact be a "new source" and the issuance of this NPDES permit subject to NEPA.

Summary

Although compliance with water quality standards requires protecting uses as well as numeric water quality criteria, EPA has only considered the effects of the LNFH's discharges on numeric water quality criteria. EPA has not considered how the LNFH

violates water quality standards through its operations. At a minimum, the LNFH routinely

- blocks salmonid migration and other fish migration, which are protected uses of Icicle Creek;
- withdraws water, resulting in temperature violations in Icicle Creek;
- diverts much of the remaining water into the LNFH "canal," causing further temperature violations and exposing trapped fish and redds to lethal temperatures; and
- uses the fish ladder at the intake dam to discharge sediment to Icicle Creek as it sees fit.

EPA should have considered all of these effects (violations) in this draft permit and placed conditions to ensure that Icicle Creek will attain water quality standards during the term of this permit.

EPA did not offer a rationale for its effluent limitation of 0.010 mg/L phosphorus. This number is over twice what the Washington Department of Ecology estimated as an effluent limitation that would result in attainment of water quality standards.

Despite high levels of PCBs in pollution abatement pond sediment, EPA did not condition the permit requiring system maintenance, including routine cleaning of the pond sediments.

Washington Trout believes that EPA should withdraw this draft permit and reissue a new draft that takes into account the all of the operations of the LNFH. EPA should also hold a public hearing to explain the derivation of the phosphorus limitation.

Thank you for the opportunity to comment. Please contact Mark Hersh, at 425-788-1167 if you have any questions.

Sincerely,

Kurt Beardslee, Executive Director
Washington Trout

Attachments

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References
(those not "generally available" are included with these comments (see 40 CFR 124.13) and are bolded below)

Montgomery Water Group. 2004. Icicle Creek target flow report for Leavenworth National Fish Hatchery. Prepared for Jacobs Civil, Inc. Kirkland, WA. 19 pp.

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USEPA. 1998. August 11, 1998 water compliance inspection report for NPDES number WA0001902, US Fish and Wildlife Service, Leavenworth, WA. Signed Dennis Lazzar, Inspector, August 19, 1998. 1 p.

USFWS. 1985. Advance project planning for pollution abatement facilities. Prepared by Sverdrup & Parcel and Associates. Portland, OR. 22 pp. + appendices.

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USFWS. 2004. Operational Plan for Leavenworth National Fish Hatchery's Structures 2 and 5. Internal memo of Leavenworth National Fish Hatchery Complex, Leavenworth, WA. October 8, 2004. 8 pp.

USFWS. 2005a. Icicle Creek fish passage restoration and intake alternatives study at the Leavenworth National Fish Hatchery. Final report. Prepared by Sverdrup Civil, Bellevue, WA. 166 pp.

USFWS. 2005b. Leavenworth National Fish Hatchery PCB and pesticide investigation. Prepared by Upper Columbia Fish and Wildlife Office, Spokane, WA. November 22, 2005. 26 pages + appendices.

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Washington Trout. 2006. Letter to Susan B. Martin, USFWS, from Kurt Beardslee, Washington Trout, with attached "Comments of Washington Trout on 'Leavenworth National Fish Hatchery PCB and Pesticide Investigation, November 22, 2005.'" Duvall, WA. 7 pp.

P.O. Box 402 • Duvall WA 98019 • 425-788-1167 • Fax 425-788-9634
wildfish@washingtontrout.org • www.washingtontrout.org

WASHINGTON TROUT

March 29, 2006

Susan B. Martin, Supervisor
Upper Columbia Fish and Wildlife Office
11103 East Montgomery Drive
Spokane, WA 99206

Dear Ms. Martin:

Thank you for your letter of January 20, 2006, inviting further discussion on the PCB and pesticide investigation conducted at the Leavenworth National Fish Hatchery. As you may know, Mark Hersh of my staff has been in communication with Jim Hansen of your staff, and a meeting is tentatively scheduled for 1 P.M. on April 25, 2006 at the Hatchery. Attending for Washington Trout will be Dick Rieman, a Washington Trout board member and Icicle Valley resident, Mark Hersh, and me.

In hopes of making the meeting as productive as possible, we are enclosing written comments on the "Leavenworth National Fish Hatchery PCB and Pesticide Investigation" report, dated November 22, 2005. We received that report on December 6, 2005 from the Department of Justice.

I look forward to the meeting and any other discussions we may have. Please contact Mark Hersh (mark@washingtontrout.org; phone 425-788-1167, ext. 223) if you have any questions regarding our comments or the upcoming meeting.

Sincerely,

Kurt Beardslee
Executive Director

Enclosure

cc w/enclosure:

Richard Smith, Smith and Lowney, PLLC
Dick Rieman
Julie Collins, USFWS
Don Steffeck, USFWS
Dave Schneider, Ecology
Dave Serdar, Ecology
Dale Norton, Ecology

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Comments of Washington Trout On
"Leavenworth National Fish Hatchery PCB and Pesticide Investigation, November 22, 2005"

Washington Trout appreciates the opportunity to comment on the investigation report ("report"). While we provide comments on both the fish contaminant and the sediment contaminant aspects of the study, our major concern is with stream sediments and the likelihood of the Hatchery having polluted Icicle Creek and the Wenatchee River with PCBs or other contaminants.

In places, our comments also refer to the "Sampling Plan to Address Potential PCB Issues at the Leavenworth National Fish and Wildlife Hatchery" ("work plan") provided to Washington Trout by the Service (February 1, 2006 email communication from Jim Hansen to Mark Hersh). Our comments below correspond with the section headings in the Service's report.

2.1 Sediment sample collection

The work plan says that the instream samples were to be gathered within 100 meters of the hatchery's intake (upstream) and within 100 meters of the outfall (downstream), and in both cases, fine-grained sediments were to be targeted. We agree with the need to sample fine-grained sediments, as PCBs and other organic pollutants are more likely to be found in fine-grained sediment (USEPA 2001). We are unsure why the Service felt constrained to sample within 100 meters. Instead, the emphasis, we feel, should have been placed on obtaining sediments within a depositional zone, in order to actually find the desired fine-grained sediments (USEPA 2001). Figures 2 and 3 of the report depict the sampling locations (no scale is provided) and the downstream samples appear to have been taken along the outfall-side of the stream, and in a longitudinal manner within the discharge's mixing zone. Our concerns with sampling in this manner are described in detail below.

Table 1 indicates in the "sample comments" column that of the five upstream samples, four met the work plan's target of fine-grained sediments, as they are described as "fine sand, silt." One sample is described as "coarse sand at intake." However, of the downstream samples, "fine sand" was the primary material sampled in only two samples, "coarse sand" in two samples, and "silt, fine sand" in one sample scooped from a rock surface. This latter sample was only 1 cm thick. The downstream samples do not meet the work plan's goal of targeting fine-grained sediments. The fine-grained upstream samples tend toward a greater likelihood of detecting contaminants, while the coarse-grained downstream samples tend toward a lesser likelihood of detecting contaminants.

The lack of suitable samples taken downstream of the Hatchery is problematic. While the samples may very well characterize conditions within 100 meters of the outfall, they may not represent the most contaminated sediments to be found in Icicle Creek, given the lack of fine-grained sediments sampled. The Service, we feel, should have assessed the mixing characteristics of the effluent, evaluated downstream areas, and then sampled at the appropriate depositional areas, as defined by sediment grain size, rather than rigidly adhering to the 100-meter limit and sampling coarse-grained sediments that are much less likely to be contaminated.

2.2 Fish sample collection

The work plan states that all salmon eggs in the Hatchery are held in the painted tanks, and after hatching, some fry move to the fiberglass tanks while others remain in the painted tanks. Is the history of the sampled pre-smolt fish known? Specifically, when they were fry, were they in painted tanks or fiberglass tanks? It seems as if two groups of pre-smolts should have been sampled and analyzed, based on the two different types of fry tanks used.

2.5 Data analysis and statistics

It is not clear to Washington Trout that inferential statistics (i.e. using statistical analysis to infer differences in sediments above and below the Hatchery) are appropriate in this study. We do not believe that each individual sediment sample represents an independent measure of the contaminant concentration, given the heterogeneity of the grain size, and the downstream sampling locations (within the mixing zone). Because the samples are not replicates, this appears to be an example of "pseudoreplication," defined as the "use of inferential statistics to test for treatment effects with data where either treatments are not replicated (though samples may be) or replicates are not statistically independent" (Hurlbert 1984).

In addition, autocorrelation must be considered in studies where one set of samples is upstream of the others. The fact that some sample locations are downstream of others does not mean that pseudoreplication will always be an issue. Pseudoreplication as described by Hurlbert (1984) can be avoided given careful design in observational studies or impact assessments (Stewart-Oaten and others 1986). But it remains a problem in impact assessment:

> Impact assessment is not an experiment. The task is to assess impact at a particular site, not a population of sites, so assignment of treatments to sites is irrelevant: "pseudo-replication" does not arise from one impact and one control station, or even from no control at all....An impact will cause the "before" and "after" time series to differ. Inference about this requires a model, to be assessed by its plausibility and its fit to the data. **For instance, treating multiple values from the same time and site as independent assumes populations do not vary naturally over time (or that sites vary in perfect unison); this is highly implausible and, with a single before and a single after time, cannot be checked with the data, so "pseudo-replication" is apt.** However, the assumption that site values, or differences between sites, from several before and after times have negligible correlation might be plausible in some systems if the time gaps are large enough and can be checked against the data, so "pseudo-replication" is inappropriate. A model that allows for serial correlation is usually better, but there are many of these, and any usable one will have to limit the complexity or the order of the correlation (Stewart-Oaten 2003; emphasis added; internal citations omitted).

In this case there are no "before" data, just one-time measurements of contaminant concentrations in fish and sediments. As discussed above, two downstream samples were not primarily fine-grained materials, and another was from a shallow layer resting upon a rock surface. Just as important, the downstream samples were not taken after complete mixing with the Hatchery's effluent, but instead along the bank where mixing is incomplete. One sample was taken near the edge of the outfall ditch. Each downstream sampling location,

therefore, would see varying concentrations of solids and wastewater discharged by the Hatchery. Therefore, we do not think that these five samples constitute independent measures of the contaminant concentrations downstream of the Hatchery, and we feel that using these samples as independent replicates in inferential statistical tests is not appropriate.

In the comparison of sediments, the relevant "null hypothesis" is "there is no difference between contaminant levels in the three locations, upstream, downstream, and in the pollution abatement pond of the Hatchery." The conclusion of the Service is that there is sufficient evidence to fail to reject the null hypothesis. Reaching that conclusion, however, may have implications for future work or regulatory action. In such cases, a power analysis, represented by an estimate of the β value, or the probability of making a Type II error (i.e., not rejecting the null hypothesis when it should have been), should be made. Peterman (1990) discusses the need for power analyses in regard to fisheries management decisions, and his reasoning is applicable in this case. With few valid samples in the three sediment groups, it is likely that the β value of the Service's analysis is unacceptably high. In any case, it should be reported. If the Service continues to believe that inferential statistics are appropriate, Washington Trout strongly recommends that a power analysis also be conducted for both the sediment and the fish tissue analyses.

The Washington State Department of Ecology conducted a TMDL for PCBs on the Spokane River, and used a different approach (Ecology 2003). For each site, five locations within a 300 yard reach were sampled and physically composited into one sample before chemical analyses were conducted. This produced one datum for each contaminant for each particular site. The site-specific data were individually compared to appropriate benchmarks. We feel that the Service should have considered an approach like Ecology's, but because many of the downstream samples lack sufficient fine-grained material and probably do not represent worst-case conditions, there is little to be gained by re-analyzing the present data.

3.1 Sediment analysis

Values for contaminant concentrations upstream and downstream of the Hatchery in Table 3 (normalized for 1% total organic carbon (TOC)) are higher than those found in Table 2, indicating that instream samples were less than 1% TOC. This is further evidence that the sampled sediments are not very likely to have appreciable concentrations of contaminants.

3.2 Whole-body fish tissue analysis

While only one statistically significant difference was found between painted-tank fry and fiberglass-tank fry (for pentachlorobenzene), differences were found for many other contaminants, implying that suspicions about the painted tanks may be correct. Differences between pre-smolts and fry were detected, but without knowing the history of the fish (did they spend any time in painted tanks?), it is more difficult to determine the source(s) of contamination.

4.2 Fish tissue benchmarks

This section identifies a number of benchmarks, including whole-body fish and edible portion fish. We are unclear why the fish tissue results were compared to benchmarks. Presumably, fish were sampled to determine if fish are becoming contaminated while being raised at the Hatchery. The results section (3.2) shows that this is the case. Edible portion benchmarks (mentioned in this section and in Table 8) have no relevance, as fish from the Hatchery are not being released for any commercial or sport fishery until they grow many times larger than the 10g sampled fish. The only relevant benchmarks can be for wildlife that may be consuming Hatchery fish, but these lose their power for meaningful comparisons because the tested pre-smolt fish (10g) were much smaller than released smolts that would become wildlife prey. USFWS (2005) states that the five-year average for smolt size on release is 25g (18.1 fish/lb).

In a draft Biological Assessment, the Service has identified bald eagles as foraging on Hatchery grounds and downstream of the Hatchery (USFWS 2005), and concludes that the Hatchery has "no effect" on bald eagles. But the Service also states that "the hatchery may have a beneficial effect by increasing bald eagle prey base fishery." The increased prey base may be a two-edged sword. If bald eagles are consuming Hatchery smolts with sufficient contaminant concentrations, bald eagles may be adversely affected. Of course, as the Service is well aware, published benchmarks for the protection of wildlife may not be adequate to ensure no adverse effect to bald eagles. A "safe" level of PCBs in fish prey to protect bald eagles will be influenced by site-specific factors, including contaminant levels of non-Hatchery-origin prey (e.g., contaminated Icicle Creek and Wenatchee River fish), the feeding habits of affected eagles, etc. The Service may want to consider congener-specific analyses on smolts and resident Icicle Creek and Wenatchee River fish in order to draw a complete picture of the possible effects of the Hatchery on bald eagles, because the various congeners of PCBs will exert different toxicities (Van den Berg and others 1998).

4.3 Sediment PCB concentrations

This section verifies that instream sediments were less than 0.5% total organic carbon, and again leads us to question whether the appropriate sediments were sampled.

The Service notes that the Aroclors detected in the settling pond sediments (Aroclors 1242 and 1260) are different from the Aroclor found in the paint of the painted tanks (Arochlor 1254). Aroclors will degrade under both aerobic and anaerobic conditions, with even highly chlorinated Aroclors degrading under anaerobic conditions (reviewed by USEPA 2002), and it is possible that the painted tanks may be the source of the Aroclor 1242 detected in the pond sediments.

5.0 Conclusions

Washington Trout does not agree with the conclusion that "the hatchery is not a significant source of PCBs or pesticides to Icicle Creek." The lack of independence of the downstream samples (inconsistent and suboptimal sediment grain size, and longitudinal sampling within the mixing zone) means that the use of inferential statistics in this case is not appropriate. The samples taken downstream of the Hatchery may not represent the possible worst-case conditions. Therefore, we feel that the Service's conclusion is unsupported.

We also do not agree with the conclusion that fish are not accumulating PCBs or other contaminants to levels of concern. The data do show that fish are accumulating

contaminants. The comparisons with benchmarks mean little because the tested fish were considerably smaller than released smolts that may be consumed by wildlife.

Recommendations of Washington Trout

Washington Trout believes that the question of whether the Hatchery has, or is, releasing PCBs and other contaminants to Icicle Creek remains open, and therefore we recommend re-sampling of Icicle Creek sediments with a concerted effort to obtain fine-grained sediments with adequate total organic carbon. If adequate depositional areas are not available, then other methods (e.g., semi-permeable membrane devices) should be employed to better determine if the Hatchery is currently discharging PCBs or other contaminants to Icicle Creek.

The Department of Ecology verified the need to list Icicle Creek and the Wenatchee River on the 2004 Clean Water Act Section 303(d) list (Ecology 2004). That document states:

> A TMDL study for PCBs and DDT is recommended for the Wenatchee River and Icicle Creek. The study should focus on potential sources of PCBs and DDT to the river. The use of Semipermeable Membrane Devices (SPMDs) is recommended as a tool for identifying sources. SPMDs are *in situ* samplers that accumulate lipophilic chemicals such as PCBs and DDT from water. SPMDs can be deployed for short periods, usually about a month.

Washington Trout recommends that the Service coordinate any alternative methods with the Department of Ecology's TMDL study for PCBs and DDT. More information on SPMDs can be found at http://wwwaux.cerc.cr.usgs.gov/SPMD/index.htm.

Because the USFWS investigations report states that the pollution pond will soon be dredged, we recommend that any SPMD deployment, or any other alternative method to determine discharges of contaminants, occurs after dredging.

References

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enclosed as a courtesy although we consider to be "generally available" mh

United States Environmental Protection Agency
Washington, D.C. 20460

Water Compliance Inspection Report

Section A: National Data System Coding (i.e., P

Transaction Code	NPDES	yr/mo/day	Inspe	Fac Type
1 [ ] 2 [5]	3 [WA0000191021] 11	12 [980811] 17	18 [ ]	20 [4]

Remarks

21 [ ] 66

Inspection Work Days	Facility Self-Monitoring Evaluation Rating	B1	QA	Reserved
67 [ ] 69	70 [2]	71 [ ]	72 [ ]	73 [ ] 74 75 [ ] 80

Section B: Facility Data

Name and Location of Facility Inspected *(For industrial users discharging to POTW, also include POTW name and NPDES permit number)*

U.S. FISH AND WILDLIFE SERVICE
LEVENWORTH NFH COMPLEX
12790 FISH HATCHERY ROAD
LEVENWORTH, WA. 98826

Entry Time/Date	Permit Effective Date
2:00 PM 8-11-98	1-30-75
Exit Time/Date	**Permit Expiration Date**
5:00 PM 8-11-98	1-31-79

Name(s) of On-Site Representative(s)/Title(s)/Phone and Fax Number(s)

GREG PRATSCHNER
COMPLEX MANAGER
(509) 548 7641

Other Facility Data

U.S. EPA Region 10
AUG 21 1998
OFFICE OF WATER

Name, Address of Responsible Official/Title/Phone and Fax Number

SAME AS ABOVE

Contacted ☒ Yes ☐ No

Section C: Areas Evaluated During Inspection *(Check only those areas evaluated)*

[ ] Permit	[ ] Flow Measurement	[X] Operations & Maintenance	[ ] CSO/SSO (Sewer Overflow)
[ ] Records/Reports	[X] Self-Monitoring Program	[X] Sludge Handling/Disposal	[ ] Pollution Prevention
[ ] Facility Site Review	[ ] Compliance Schedules	[ ] Pretreatment	[ ] Multimedia
[X] Effluent/Receiving Waters	[ ] Laboratory	[ ] Storm Water	[ ] Other:

Section D: Summary of Findings/Comments *(Attach additional sheets of narrative and checklists as necessary)*

Facility vacuumes & brushes raceways 1-2x/week. Incubators & raceway effluent sent to pollution abatement pond for seperation (settling) of solids before entering Icicle creek. Stack towers remove N_2 before water enters rearing tanks. Sand settling tank working OK. Pollution abatement pond cleaned every 2 years. On 7/29/98 John Anderson Excavati contracted to clean. All water was not stopped during cleaning thus carrying some sludge out to Icicle creek. Facility was instructed to clean it up

Name(s) and Signature(s) of Inspector(s)	Agency/Office/Phone and Fax Numbers	Date
Dennis Lazzar DENNIS LAZZAR	EPA/WOO (360) 753 9469	8/19/98
Signature of Management Q A Reviewer	**Agency/Office/Phone and Fax Numbers**	**Date**

EPA Form 3560-3 (Rev 9-94) Previous editions are obsolete.

insp 8/25/98 lv

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
WASHINGTON OPERATIONS OFFICE
300 Desmond Drive SE, Suite 102
Lacey, Washington 98503

August 19, 1998

Greg Pratschner
U.S. Fish and Wildlife Service
12790 Fish Hatchery Road
Leavenworth, WA 98826

Dear Mr. Pratschner:

I am following up my visit to your facility with this reiteration of our discussion of August 11, 1998. At that time, I suggested you have an engineer, or person of your choice, determine how to clean the west bank of Icicle Creek of fish waste which washed out of your pollution abatement pond on July 29, 1998.

This waste should be cleaned up immediately, with a followup letter to our office acknowledging that the work has been completed.

Thank you for your attention to the matter.

Sincerely,

Dennis Lazzar,
NPDES Inspector